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Proceedings of the regional peer review on the assessment of the Gulf of St. Lawrence lumpfish stock (3Pn, 4RS)

February 18, 2016
Mont-Joli, Quebec

Chairperson: Martin Castonguay
Rapporteur: Sonia Dubé

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January 2017

Canada

Foreword

The purpose of these proceedings is to document the key activities and discussions of the meeting. The proceedings may include research recommendations, uncertainties and the rationale for decisions made during the meeting. They may also document when data, analyses or interpretations were reviewed and rejected on scientific grounds, including the reason(s) for rejection. Therefore, interpretations and opinions presented in this report may be factually incorrect or misleading, but are included to record, as faithfully as possible, what was considered at the meeting. No statements are to be taken as reflecting the conclusions of the meeting unless they are clearly identified as such. Moreover, further review may result in a change of conclusions where additional information was identified as relevant to the topics being considered, but not available within the time frame of the meeting. In the rare case when there are formal dissenting views, these are also archived as Appendices to the Proceedings.

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SUMMARY

This document contains the proceedings from the meeting held within the regional assessment of Lumpfish in the Gulf of St. Lawrence (3Pn, 4RS). This review process was held on February 18th, 2016 at the Maurice Lamontagne Institute in Mont-Joli. This meeting gathered about twenty participants from sciences to management. These proceedings contain the essential parts of the presentations and discussions held and list the recommendations and conclusions that were presented during the review.

SOMMAIRE

Ce document renferme le compte rendu de la réunion tenue dans le cadre du processus régional d'évaluation de la lompe du golfe du Saint-Laurent (3Pn, 4RS). Cette revue, qui s'est déroulée le 18 février 2016 à l'Institut Maurice-Lamontagne à Mont-Joli, a réuni près de vingt participants des sciences et de la gestion. Ce compte rendu contient l'essentiel des présentations et des discussions qui ont eu lieu pendant la réunion et fait état des recommandations et conclusions émises au moment de la revue.

INTRODUCTION

The Quebec Region of the Department of Fisheries and Oceans (DFO) is responsible for assessing the stocks of several exploited fish and invertebrate species in the Estuary and Gulf of St. Lawrence. Most of these stocks are assessed periodically within a regional advisory process, which is conducted at the Maurice Lamontagne Institute in Mont-Joli. This document consists of the proceedings of the meeting held on February 18, 2016, on the assessment of the Gulf of St. Lawrence (3Pn, 4RS) lumpfish stock.

The objective of the review is to determine whether there were any changes in the resource's status and whether adjustments were required to the management plans based on the chosen conservation approach, the ultimate goal being to provide scientific advice on managing the lumpfish stock in the Gulf of St. Lawrence (3Pn, 4RS) for the 2016 to 2018 fishing seasons.

These proceedings report on the main points discussed in the presentations and deliberations stemming from the activities of the stock assessment regional committee. The regional review is a process open to all participants who are able to provide a critical outlook on the status of the assessed resources. Accordingly, participants from outside DFO are invited to take part in the committee's activities within the defined framework for this review (Appendices 1 and 2). The proceedings also list the recommendations made by the meeting participants.

BACKGROUND

The chairperson of the meeting, Martin Castonguay, welcomed participants and reviewed the meeting's objectives. Johanne Gauthier, the biologist who conducted the review, outlines the collaborators' work. She describes the presentation plan and the Terms of Reference. She also reiterates the conclusions of the last Science Advisory Report (DFO 2011). Ms. Gauthier provides a brief summary of DFO's work on the lumpfish over the years. She presents the statistics on global and Canadian landings, as well as a few aspects of the lumpfish's biology (growth, reproduction, diet and predation).

- It is pointed out that this species has no instar. Instead, it exhibits direct development in juveniles of 5 mm.
- Juveniles in eelgrass beds are discussed, and their dispersion and time of settlement are examined.
- It could be a good idea to use genetic tools to determine exactly what the unidentified stomach contents consist of.
- It is added that there are few known fish that act as lumpfish predators. Seals are known predators.

An overview of the commercial fishery and the management measures is presented. The fishery targets female gonads for the caviar market.

- Not many activities are covered by at-sea observers. The crafts are small (under 35 ft.) and fishing takes place very early in the season (May and June).
- The available information is not sufficient to calculate a solid CPUE.

ASSESSMENT OF THE RESOURCE

FISHERY INDICATORS

Ms. Gauthier presents statistics and indices for the fishery. Lumpfish roe landings in 3Pn and 4RS dropped significantly from an annual average of 349 t for the 1986-2009 period to 35 t for the 2010-2015 period. The number of active fishers fell from an annual average of 404 for the 1986-2009 period to 65 for the 2010-2015 period. Since 2013, all fishing activity has been concentrated in the 4Ra unit area, whereas it traditionally took place in subdivision 3Pn, along the west coast of Newfoundland (4Rbdc), and along the Lower North Shore in unit area 4Sw.

The decline in landings and fishing effort could be due in part to factors such as market conditions, a synchronization of fishing with the arrival of females in coastal waters, weather conditions and the possibility of more lucrative fisheries. The fishery performance index shows cyclical, synchronous variations in every division. The index was low from 2009 to 2012. In 4Ra in 2015, the index was the same as the average for 1986-2014.

- Participants mention that there has indeed been a price effect on landings, with the exception of the past few years, in which the relatively high price does not seem to have led to an increase in fishing effort.
- They point out that in 4S, the fishery likely dates back earlier than 1986. The date may correspond to the implementation of the first management measures.
- Fishery performance index is the preferred term over catch per unit effort (CPUE).
- There seems to have been few reported lumpfish bycatches in the Northern Gulf of St Lawrence. However, the Harp Seal is a significant bycatch in the lumpfish fishery.

SURVEY INDICATORS

Ms. Gauthier asks the following question: "Is the lumpfish a pelagic or a benthic species?" It has characteristics of both and should be considered either semi-pelagic or semi-benthic. Meeting participants are also asked: "Are trawl net surveys useful tools for monitoring lumpfish abundance?"

- Based on various experiments, particularly those conducted in Iceland and Norway, there are advantages to each type of trawl (benthic and pelagic).
- A difference in the size of lumpfish can also be observed based on the type of trawl used—benthic (larger lumpfish) and pelagic (smaller lumpfish).

A variety of indices from different research surveys are briefly presented. According to DFO's annual survey in August (1990-2015), lumpfish are a rare catch and are not very abundant but are widely distributed in the Northern Gulf of St. Lawrence. The highest concentrations are observed along the North Shore. The bulk of the lumpfish captured in DFO's survey are juveniles. Given the scarcity of mature individuals in the survey, we are unable to comment on the status of this resource.

- The surveys of the Northern Gulf of St Lawrence (January vs. August, 1990-1994) reveal a seasonal effect caused by a concentration of lumpfish on the bottom in the winter, which increases their catchability.
- Some participants find that there are cyclical variations in the abundance index in DFO's annual survey, as observed in the fishery.

- The fact that higher concentrations were observed along the North Shore is discussed. This distribution may be due in part to the composition of the bottoms (rockier).

Lastly, a few hypotheses are put forward to explain the decline in catches over the past few years, particularly in this fishery: market conditions, a synchronization of fishing with the arrival of females in coastal waters, weather conditions, the possibility of more lucrative fisheries, and natural and anthropogenic threats.

- Several participants feel that it is an issue of cyclical variation, and that the situation will rectify itself.
- Some participants nevertheless see a positive signal in the results of DFO's annual survey.
- The fact remains that the sharp decline in the fishery's landings and effort suggests a significant decline in resource abundance since 2006.

CONCLUSION

SUMMARY AND RECOMMENDATION

The highlights of the assessment are presented and the participants suggest some changes. Only comments on substance (and not form) are reported.

- In the highlight on the number of active fishers, it is important to point out that since 2013, all fishing activities have been carried out in the 4Ra unit area.
- It is also important to list all of the factors that could explain the decline in catches and fishing effort.
- DFO's annual survey shows that the highest concentrations were observed along the North Shore. It is suggested that catches (juveniles) be characterized. It is also suggested that a reference be made to the fact that because of the scarcity of mature individuals in the survey, we cannot comment on the resource's status.
- It is important to include a highlight on the characteristics that increase lumpfish vulnerability to exploitation, such as homing, which increases the risk of local depletion, and the fact that gravid females are targeted.
- The cyclical nature of the fluctuations should also be reiterated, and it should be pointed out that it seems to have been low since 2009.
- Meeting participants agree that the sharp decline in landings and effort suggests a significant decline in resource abundance since 2006.

The meeting participants' **recommendation** is therefore as follows:

This fishery targets gravid females. Moreover, local over-exploitation is possible, given that lumpfish seem to return to the same spawning sites every year.

The sharp decline in landings and effort suggests a significant decline in resource abundance since 2006. The abundance of the resource seems to fluctuate on a cyclical basis and has been low since 2009. Despite uncertainty as to the causes of this low abundance, the vulnerability of this resource to recruitment overfishing argues for a very prudent approach.

ASSESSMENT FREQUENCY AND MONITORING INDICATORS

In terms of assessment frequency and monitoring indicators, meeting participants recommend that a science review be conducted every three years without any updates to indicators in the interim.

RESEARCH PRIORITIES

Several issues are identified in terms of research to prioritize:

- Continue to work on identifying stomach contents;
- Try to locate spawning grounds;
- Obtain further data based on the available surveys (e.g., L50).

Alain Fréchet states that a lumpfish work group has been created. Proceedings of the first meeting held in Iceland are available. Research priorities were identified at that meeting. A second meeting is being planned in Scandinavia.

APPENDIX 1- LIST OF PARTICIPANTS

Name	Affiliation
Bernier, Denis	DFO – Science
Bourdages, Hugo	DFO – Science
Brulotte, Sylvie	DFO – Science
Calderon, Isabel	DFO – Fisheries Management
Castonguay, Martin	DFO – Science
Chabot, Denis	DFO – Science
Cyr, Charley	DFO – Science
Dallaire, Jean-Paul	DFO – Science
Dubé, Sonia	DFO – Science
Duplisea, Daniel	DFO – Science
Fréchet, Alain	DFO – Science
Gauthier, Johanne	DFO – Science
Hurtubise, Sylvain	DFO – Science
Lambert, Yvan	DFO – Science
Légaré, Benoît	DFO – Science
Morneau, Renée	DFO – Science
Nozères, Claude	DFO – Science
Sainte-Marie, Bernard	DFO – Science

APPENDIXE 2 - TERMS OF REFERENCE

ASSESSMENT OF GULF OF ST. LAWRENCE NAFO DIVISIONS 4RS AND SUBDIVISION 3PN LUMPFISH
REGIONAL PEER REVIEW - QUEBEC REGION

February 18, 2016
Mont-Joli, Québec

Chairperson: Martin Castonguay

Context

The lumpfish fishery (or henfish) (*Cyclopterus lumpus*) is of very short duration in the spring, but can represent a significant extra income for the coastal fishermen who practice it. In the Gulf, this fishery is primarily directed at females for the caviar market. Lumpfish fishery management is not based on Total Allowable Catch (TAC), but rather relies on effort control which includes a series of conditions including a number of nets and duration of the fishing season. This species is currently being assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

At the request of the fisheries management Branch, resource assessment is done every five years. The purpose of the review is to determine whether changes have occurred in the status of the resource that would justify adjustments to the management plan based on the retained conservation approach.

Objectives

Provide scientific advice on the management of the Gulf of St. Lawrence NAFO Divisions 4RS and Subdivision 3Pn Lumpfish for 2016-2021. This advice shall include:

- Description of the biology of Lumpfish and its distribution;
- A summary of oceanographic conditions in the Gulf;
- Analysis of the commercial fishing data including landings, fishing effort, lumpfish by-catches in other fisheries;
- An update of trends of a number of indicators relative to the abundance of the resource;
- The identification and prioritization of research projects to be considered for the future.
- Identification of indicators to follow the stock status during the years without a formal stock assessment and criteria for the reopening of the advice;
- Perspectives for the 2016-2021 fishing seasons based on available indicators;
- Hypotheses explaining the radical decline of catches in recent years;
- Options for additional conservation measures, if required, and evaluation of their expected impacts on the stock over the next five years.

Expected Publications

- Science Advisory Report.
- CSAS Research document

- CSAS Proceedings summarizing discussions.

Participation

- DFO Science and Fisheries Management
- Fishing industry
- Provincial representatives